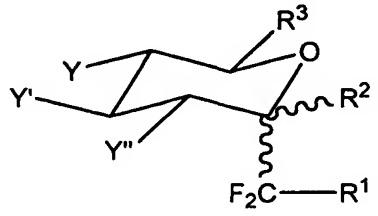
CLAIMS

1. A gem-difluorinated compound of formula:



wherein

R^1 is a group comprising an alkyl chain substituted with at least one amine, amide, or acid function,

R^2 is a hydrogen atom H or a free or protected alcohol function,

R^3 is notably an H, CH_3, CH_2OH, CH_2-OGP group wherein GP is a protective group such as an alkyl, benzyl (Bn), trimethylsilyl (TMS), tert-butyl-dimethylsilyl (TBDMS), tert-butyldiphenylsilyl (TBDPS), acetate (Ac)...,

Y, Y', Y" are independent groups

wherein Y, Y', Y" = H, OR, N_3, NR'R", SR'" ...

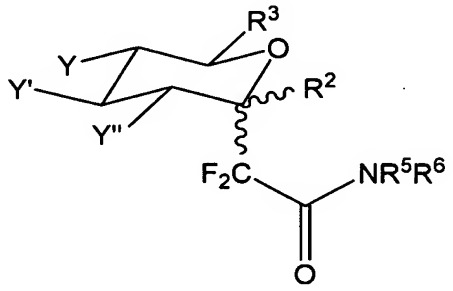
with R = H, Bn, Ac, TMS, TBDMS, TBDPS, ...,

R', R" = H, alkyl, allyl, Bn, tosylate (Ts), C(=O)-alkyl, C(=O)-Bn, ...,

R'" = H, alkyl, Ac.

2. The compound according to claim 1,

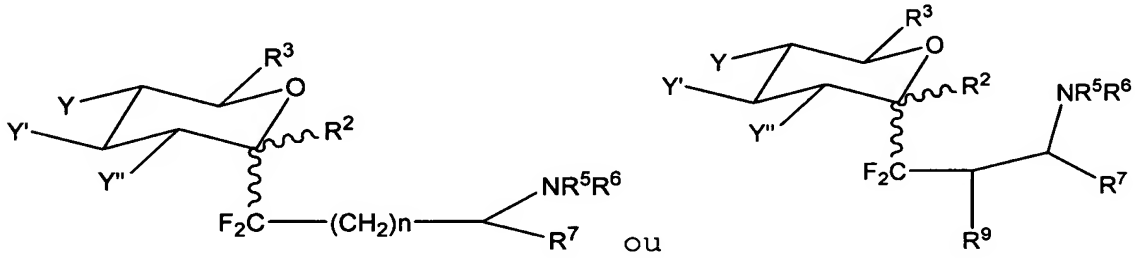
characterized in that it comprises a C-glycoside of general formula:



wherein R^5 and R^6 = H or a group either functionalized or not such as a functionalized carbon chain bearing i.a. an amine, amino acid, aminoester function, a peptide chain, a protein, a carbohydrate, a steroid, or a triterpene, an alkaloid, a lignane, or compounds of pharmacological interest.

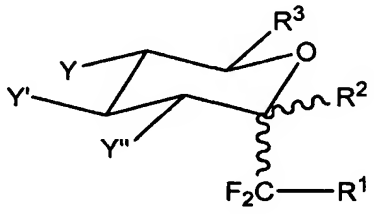
3. The compound according to claim 1,

characterized in that it comprises a glycoconjugated compound of general formula:



wherein R^5, R^6, R^7 and R^9 = H or a group either functionalized or not, such as a functionalized carbon chain bearing i.a. an amine, amino acid, aminoester function, a peptide chain, a protein, a carbohydrate, a steroid, or a triterpene, an alkaloid, a lignane, or compounds of pharmacological interest.

4. A method for preparing a gem-difluorinated compound of formula:



wherein

R^1 is a group comprising an alkyl chain substituted with at least one amine, or amide function,

R^2 is a hydrogen atom H or a free or protected alcohol function,

R^3 is notably an H, CH_3, CH_2OH, CH_2-OGP group wherein GP is a protective group such as an alkyl, benzyl (Bn), trimethylsilyl (TMS), tert-butyl-dimethylsilyl (TBDMS), tert-butyldiphenylsilyl (TBDPS), acetate (Ac)...,

Y, Y', Y" are independent groups

wherein Y, Y', Y" = H, OR, N_3, NR'R", SR'" ...

with R = H, Bn, Ac, TMS, TBDMS, TBDPS, ...,

R', R" = H, alkyl, allyl, Bn, tosylate (Ts), C(=O)-alkyl, C(=O)-Bn, ...,

R'" = H, alkyl, Ac,

characterized in that it comprises a reaction between a lactone and a halogenated derivative of general formula $XCF_2CO_2R^8$, wherein X is a halogen, in the presence of zinc, or of a lanthanide derivative and R^8 = alkyl, aryl...

5. The method according to claim 4,
characterized in that said lanthanide derivative is samarium diiodide.

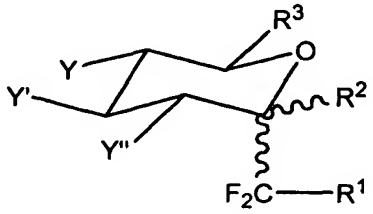
6. The method according to claim 4,
characterized in that said sugar derivative is obtained in one or more steps from a corresponding commercially available sugar.

7. The method according to claim 4,
characterized in that said reaction is followed by a deoxygenation.

8. The method according to claim 4,
characterized in that the R^8 group comprises an ester function which is reduced to alcohol.

9. The method according to claim 4,
characterized in that the R^8 group comprises an ester function which is either reduced to alcohol then oxidized into an aldehyde or hemiacetal, or directly reduced into aldehyde.

10. A method for preparing a gem-difluorinated compound of formula:



wherein

R^1 = -C(=O)-NR^5R^6, wherein R^5 and R^6 = H or a group either functionalized or not, such as a functionalized carbon chain bearing i.a. an amine, amino acid, aminoester function, a peptide chain, a protein, a carbohydrate, a steroid, or a triterpene, an alkaloid, a lignane, or compounds of pharmacological interest,

R^2 is a hydrogen atom H or a free or protected alcohol function,

R^3 is an H, CH_3, CH_2OH, CH_2-OGP group wherein GP is a protective group such as an alkyl, benzyl (Bn), trimethylsilyl (TMS), tert-butyl-dimethylsilyl (TBDMS), tert-butyldiphenylsilyl (TBDPS), acetate (Ac)...,

Y, Y', Y" are independent groups

wherein Y, Y', Y" = H, OR, N_3, NR'R", SR'" ...

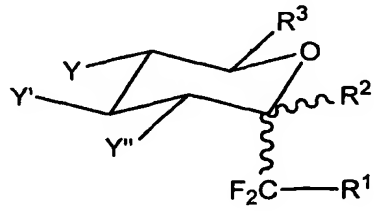
with R = H, Bn, Ac, TMS, TBDMS, TBDPS, ...,

R', R" = H, alkyl, allyl, Bn, tosylate (Ts), C(=O)-alkyl, C(=O)-Bn, ...,

R'" = H, alkyl, Ac,

characterized in that it comprises a Ugi reaction with an amine, an aldehyde and an isonitrile.

11. A method for preparing a gem-difluorinated compound of formula:



wherein

R^1 = -C(=O)-NR^5R^6, wherein R^5 and R^6 = H or a group either functionalized or not, such as a functionalized carbon chain bearing i.a. an amine, amino acid, aminoester function, a peptide chain, a protein, a carbohydrate, a steroid, or a triterpene, an alkaloid, a lignane, or compounds of pharmacological interest,

R^2 is a hydrogen atom H or a free or protected alcohol function,

R^3 is an H, CH_3, CH_2OH, CH_2-OGP group wherein GP is a protective group such as an alkyl, benzyl (Bn), trimethylsilyl (TMS), tert-butyl-dimethylsilyl (TBDMS), tert-butyldiphenylsilyl (TBDPS), acetate (Ac)...,

Y, Y', Y" are independent groups

wherein Y, Y', Y" = H, OR, N_3, NR'R", SR'" ...

with R = H, Bn, Ac, TMS, TBDMS, TBDPS, ...,

R', R" = H, alkyl, allyl, Bn, tosylate (Ts), C(=O)-alkyl, C(=O)-Bn, ...,

R'" = H, alkyl, Ac,

characterized in that it comprises a coupling reaction of a sugar derivative with an amine.

12. A composition,

characterized in that it includes at least one compound according to claims 1 to 3 or one of its derivatives or one of its salts obtained by addition to a pharmaceutically acceptable organic or mineral acid.

13. The use of a gem-difluorinated compound according to any of claims 1 to 3, for preparing antitumoral drugs.

14. The use of a gem-difluorinated compound according to any of claims 1 to 3, for preparing antiviral drugs.

15. The use of a gem-difluorinated compound according to any of claims 1 to 3, for preparing hypoglycemic drugs.

16. The use of a gem-difluorinated compound according to any of claims 1 to 3, for preparing compounds for immunology.

17. The use of a gem-difluorinated compound according to any of claims 1 to 3, for preparing anti-inflammatory compounds.

18. The use of a gem-difluorinated compound according to any of claims 1 to 3, for preparing compounds for cosmetology.

19. The use of a gem-difluorinated compound according to any of claims 1 to 3, for preparing glycopeptide analogs of antifreeze molecules.